Axel Brandt and Jennifer Diemunsch* (jennifer.diemunsch@ucdenver.edu), Campus Box 170, P.O. Box 173364, Denver, CO 80217, and Sogol Jahanbekam. Lucky Choice Number for Planar Graphs. Preliminary report.

Suppose the vertices of a graph $G$ are labeled with real numbers. For each vertex $v \in G$, let $S(v)$ denote the sum of the labels of all vertices adjacent to $v$. A labeling is called lucky if $S(u) \neq S(v)$ for every pair $u$ and $v$ of adjacent vertices in $G$. The least integer $k$ for which a graph $G$ has a lucky labeling from $\{1, 2, \ldots, k\}$ is called the lucky number of the graph, denoted $\eta(G)$. In 2009, Czerwiński, Grytczuk, and Želazny conjectured that $\eta(G) \leq \chi(G)$, where $\chi(G)$ is the chromatic number of $G$. This talk discusses improvements on the current bounds for particular classes of planar graphs with a strengthening of the results through a list lucky labeling. The results rely on applying the discharging method and the Combinatorial Nullstellensatz to show that for a planar graph $G$ of girth at least 26, $\eta(G) \leq 3$, which proves the conjecture for non-bipartite planar graphs of girth at least 26. (Received February 23, 2015)